

# **Loudoun County Fire and Rescue System**

## **Respiratory Protection Program Manual DRAFT**

**May 2008**

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## **INTRODUCTION**

Fire and rescue personnel in Loudoun County operate in a dynamic environment. During the course of emergency operations, responders may be exposed to a variety of hazards including, but not limited to, smoke, heat, toxic gases, and oxygen deficient atmospheres, any of which may result in an environment that is Immediately Dangerous to Life and Health (IDLH). To successfully mitigate such incidents, personnel must be trained and equipped properly; the importance of a safe and dependable source of breathing air cannot be overstated.

## **PURPOSE**

The purpose of this Respiratory Protection Program is to provide members of the Loudoun County Fire and Rescue System with a safe and healthful work environment. The Program is designed to ensure that respirators are properly selected, used, and maintained by system members and addresses medical surveillance, training in respirator use, and the assurance of air quality.

The Respiratory Protection Program shall comply with applicable regulatory standards (29 CFR 1910.134) and accepted industry standards to include the National Fire Protection Association and American National Standards Institute. Further, this Plan is supported by various Department Standard Operating Procedures and Fire-Rescue System Guidelines (for examples, see LCFR SOPs 02.04.01, 03.00.01, 05.03.03, and 05.03.04 as well as FRGs 2.1.3 and 2.1.3.1).

## DEFINITIONS

The following definitions are taken from 29 CFR 1910.134(b).

**Air-purifying respirator** means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

**Assigned protection factor (APF)** means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.

**Atmosphere-supplying respirator** means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

**Canister or cartridge** means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

**Demand respirator** means an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

**Emergency situation** means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

**Employee exposure** means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

**End-of-service-life indicator (ESLI)** means a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

**Escape-only respirator** means a respirator intended to be used only for emergency exit.

**Filter or air purifying element** means a component used in respirators to remove solid or liquid aerosols from the inspired air.

**Filtering facepiece (dust mask)** means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

**Fit factor** means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

**Fit test** means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)

**Helmet** means a rigid respiratory inlet covering that also provides head protection against impact and penetration.

**High efficiency particulate air (HEPA) filter** means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

**Hood** means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

**Immediately dangerous to life or health (IDLH)** means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

**Interior structural firefighting** means the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage. (See 29 CFR 1910.155)

**Loose-fitting facepiece** means a respiratory inlet covering that is designed to form a partial seal with the face.

**Maximum use concentration (MUC)** means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.

**Negative pressure respirator (tight fitting)** means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

**Oxygen deficient atmosphere** means an atmosphere with an oxygen content below 19.5% by volume.

**Physician or other licensed health care professional (PLHCP)** means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section.

**Positive pressure respirator** means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

**Powered air-purifying respirator (PAPR)** means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

**Pressure demand respirator** means a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

**Qualitative fit test (QLFT)** means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

**Quantitative fit test (QNFT)** means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

**Respiratory inlet covering** means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

**Self-contained breathing apparatus (SCBA)** means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

**Service life** means the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

**Supplied-air respirator (SAR) or airline respirator** means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

**Tight-fitting facepiece** means a respiratory inlet covering that forms a complete seal with the face.

**User seal check** means an action conducted by the respirator user to determine if the respirator is properly seated to the face.

### **Additional Definitions**

**Employee/Personnel** – Unless specifically identified, the term “personnel” or “employee” refers to both career and volunteer members of the Fire and Rescue System.

**Volunteer Agencies** – For the purposes of this Program, the term Volunteer Agencies refers only to those fire and rescue companies that have signed agreements with LCFR to provide respiratory protection services. Those Volunteer Agencies that have not signed agreements with the Department are responsible for developing their own Respiratory Protection Programs.

## **RESPONSIBILITIES**

This section identifies the responsibilities of the various groups and stakeholders affected by this Program.

### **Fire and Rescue Commission**

1. Per Fire and Rescue System Guideline 2.1.3, the Fire and Rescue Commission, in conjunction with the Department of Fire and Rescue, is responsible for establishing and maintaining a Respiratory Protection Program that ensures all system members are properly protected from respiratory hazards. The Program shall be designed and organized to ensure all system wide respirators and Self Contained Breathing Apparatus (SCBA) are properly selected, used, maintained by system members, and meet federal regulatory standards (29 CFR 1910.134) as well as industry accepted standards of the National Fire Protection Association (NFPA) and American National Standards Institute (ANSI).
2. Provide oversight and enforcement of the Respiratory Protection Program.
3. Create a calendar that depicts when individual Volunteer Agencies are scheduled for annual assessments and fit testing.

### **Department of Fire, Rescue, and Emergency Management (LCFR) – Program Services Division**

1. The Program Services Division's Respiratory Protection Manager shall serve as the Fire and Rescue System's designated *Respiratory Protection Program Administrator*. He/she shall:
  - a. Provide overall management of the Respiratory Protection Program, maintain all electronic and printed records, manage database.
  - b. Provide central contact point for system personnel, vendors, manufacturers.
  - c. Conduct all air quality tests, coordinate installation and repairs of air compressors.
  - d. Maintain central database for all SCBA, issued face pieces, cylinders with identification of all grant related equipment.
  - e. Maintain database of LCFR SCBA Technicians.
  - f. Long-range planning for equipment upgrades, regulatory compliance, and replacement.
  - g. Maintain inventory control over all required testing equipment.
  - h. Maintain repair and calibration of all test equipment.

2. The Respiratory Protection Manager shall continuously measure the effectiveness of the Respiratory Protection Program. Measures of the Program include, but are not limited to the following:
  - a. Changes and recommendations by system members to better meet their health and safety needs.
  - b. Results of quarterly inspections of respiratory protection equipment performed by Station Captains and/or worksite supervisors.
  - c. Results of an annual questionnaire to system members to comment and rate the current respiratory protection program and equipment.

***Program Services Division – Offices of Apparatus/Fleet and Logistics***

1. Coordinate respirator purchases and maintain an adequate inventory of equipment.

**Department of Fire, Rescue, and Emergency Management (LCFR) – Division of Training**

1. The Department's Division of Training shall provide comprehensive, understandable, annual training to employees who are required to use respirators.
2. Ensure that personnel participating in training evolutions are properly protected from the hazards of an IDLH atmosphere.

**Department of Fire, Rescue, and Emergency Management (LCFR) – Division of Operations**

1. Ensure that all personnel participating in any emergency response operation are protected from the hazards of an IDLH atmosphere.
2. Ensure the strategic assignment of SCBA Technicians throughout the County.

**SCBA Technicians**

1. Maintain current Scott certification.
2. Complete repairs in a timely manner.
3. Process required paperwork and forward to Program Manager.
4. Maintain inventory of repair items, SCBAs, etc.



## **Volunteer Agencies**

1. Provide and administer the Respiratory Protection Program for their members.
  2. Ensure that all respirators used by their agencies have been approved through the Respiratory Protection Program.
  3. Determine status with regard to participating in LCFR's SCBA Program and cooperate if indicated.
  4. If the Volunteer Agency chooses not to participate in the SCBA Program, the following provisions are mandated through the Fire and Rescue Commission for the general welfare of all system personnel who volunteer or are assigned to the station.
    - a. All SCBA must be flow tested annually by an approved in-house repair facility or an authorized dealer. Copies of the results must be provided to the Respiratory Protection Manager upon request.
    - b. All repairs that require a flow test must be documented and copies of the results provided to the Respiratory Protection Manager.
    - c. Develop internal policies and procedures to ensure that damage identified by personnel is communicated through the chain of command for repair at the Company's expense.
    - d. All cylinders shall be inspected for damage and current hydrostatic test status.
    - e. All cylinders that are dropped, struck, exposed to high heat, etc, shall be reported and are subject to a hydrostatic and visual test by the approved facility repair technician.
    - f. If the station is equipped with a breathing air compressor, the results of the air quality tests must be submitted to the Respiratory Protection Manager after each quarterly test or compressor repair and the results posted at the compressor.
    - g. If the Volunteer Agency fails to comply with the aforementioned mandates, the Department of Fire, Rescue, and Emergency Management reserves the right to assign county owned SCBA to its employees.
  5. Identify and assign Respiratory Protection Program Administrators who shall work in conjunction with LCFR Protection Manager.
  6. Coordinate with the Department's Health and Safety Office to schedule annual fit testing and medical evaluations, at the County's expense.
    - a. Develop internal procedures to ensure that personnel who do not wish to accept the County's offer of an NFPA 1582 physical are medically cleared to use a respirator.
  7. Ensure that only qualified candidates appear for fit testing and that the individual has passed the fit test prior to the use of any respirator.
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8. Work with the Department's Volunteer Coordinator to maintain medical and fit testing records.

### **Supervisors**

1. Supervisors shall ensure each member under his or her supervision using a respirator has received appropriate training in its use and an annual medical evaluation.
2. Supervisors shall ensure the availability of appropriate respirators and accessories, provide adequate storage facilities, and ensure proper respirator equipment maintenance.
3. Supervisors must be aware of tasks requiring the use of respiratory protection, and ensure all members engaged in such work use the appropriate respirator(s) at all times.

### **System Personnel**

1. It is the responsibility of all system personnel to wear the task-appropriate respirator when and where required and in the manner in which they were trained and fit tested.
2. Personnel utilizing respirators shall report any respirator malfunction to their supervisor immediately.
3. Personnel shall also guard against mechanical damage to the respirator, clean the respirator as instructed, and store the respirator in a clean location.
4. Personnel shall maintain personal grooming standards consistent with applicable Standard Operating Procedures and Fire and Rescue System Guidelines (LCFR SOP 01.01.07; FRG 2.1.3).

## **MEDICAL SURVEILLANCE**

The section to be added at a later date.

## **FIT TESTING**

1. Pursuant to 29 CFR 1910.134(f), before an employee may be required to use any respirator with a negative or positive pressure tight-fitting facepiece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used.
2. Personnel required to wear respirators shall receive initial and subsequent annual fit tests performed by a qualified fit tester in compliance with federal and industrial respiratory standards. Career personnel will receive their annual fit tests during their NFPA 1582 medical evaluation; fit tests for volunteers will be scheduled through the Department's Health and Safety Office and representatives of the volunteer company.
3. In addition to the annual fit test, an individual and/or his/her immediate supervisor may request a fit test to ensure proper respirator fit.
4. The County shall conduct an additional fit test whenever the employee reports, or the, contracted Occupational Health provider, supervisor, or Program Administrator makes visual observations of, changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.
5. Any individual who fails to successfully pass a respirator fit test will not be allowed to return to operational duties until he/she retakes and successfully completes a fit test.

## **Quantitative Fit Testing**

Quantitative fit testing, using the Portacount Plus fit test system, shall be performed on Self Contained Breathing Apparatus, Air Powered Respirators, Powered Air Purifying Respirators, Issued Haz Mat Respirators, and N-95 respirators. This method of testing provides a means of assessing the individual's ability to obtain an adequate face piece to face seal by sampling and measuring particulate contaminant concentration outside the face piece and inside the face piece. An acceptable fit is achieved when the individual successfully completes a series of programmed exercises.

Individuals who do not initially pass the fit test shall be offered another size face piece or another respirator for testing. If, after three different sizes/respirators, the individual still does not pass, this individual is not qualified to wear the said respirators offered by Loudoun County.

## **Requirements Prior to Being Fit Tested**

If one or all of these requirements are not in compliance, the fit test shall not be conducted:

1. Personnel shall be in compliance with 29 CFR 1910.134(a) and Department grooming standards pertaining to facial hair.
2. **Glasses** – Proper fitting of the respiratory protective device face piece for individuals wearing corrective glasses may not be established if temple bars or straps extend through

the sealing edge of the face piece. If eyeglasses must be worn with a respirator, they must be worn so as not to affect the seal of the face piece.

The Department will provide manufacturer-approved spectacle kits, if requested. The Safety Officer and/or Respiratory Protection Manager shall provide the individual with a list of lens requirements. At his/her expense, the individual shall have manufacturer-approved lenses installed by a licensed optician. Personnel shall forward lens documentation to the Safety Officer for inclusion in the employee's personnel file.

3. **Contact Lenses** – Soft contacts may be worn inside the SCBA face piece. Hard contacts are not permissible.
4. Personnel shall not eat, smoke, or chew tobacco for at least 30 minutes prior to the fit test.
5. Personnel shall receive a NFPA 1582 physical or a Respirator Clearance Assessment from the County's occupational health center prior to being fit tested (SCBA Only).
6. Personnel shall complete and forward the OSHA Respirator Questionnaire to the occupational health center for review. Once cleared, these individuals may proceed with N95 respirator testing only.

## Fit Checks

Fit checks shall be performed each time a respirator is donned by personnel to ensure a protective seal has been established.

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure checks listed below, or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

### 1. Facepiece Positive and/or Negative Pressure Checks

**Positive pressure check.** Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

**Negative pressure check.** Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

## 2. Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

## **SELECTION AND USE OF RESPIRATORY PROTECTION EQUIPMENT**

1. Only personnel who have been trained, fit tested, and medically authorized to use respiratory protection equipment are permitted to do so.
2. Prior to issuing respiratory equipment, all members shall be trained on the donning and use of the equipment.
3. If a member is not familiar with using a specific respirator or requests remedial training, he/she shall be directed to their respective supervisor who shall conduct the training or coordinate with the Division of Training.

### **Respirator Selection**

1. Respirators selected for purchase shall be approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 42 CFR Part 84.
2. Only respiratory protection equipment approved by the Loudoun County Fire and Rescue Commission shall be authorized for use by system members. See Table 1 below.

**Table 1: Respirators Approved for Use in Loudoun County**

<b>Approved Respirators</b>
SCOTT AV2000 or 3000
3M 8211 N95
3M 1870 N95
3M 9210 N95
Moldex 2201 N95
Moldex 2200 N95
Moldex 2207 N95
MSA Advantage 200LS

### **Respirator Selection for Hazardous Environments – IDLH**

1. Respiratory protection shall be provided through the use of a Self Contained Breathing Apparatus (SCBA), which shall be donned and utilized for firefighting (i.e. structure fires, vehicle fires, dumpster fires, salvage and overhaul, etc.), and other atmospheres that are deemed Immediately Dangerous to Life and Health (IDLH).
  - a. If there is any doubt whether an environment is an IDLH, personnel shall don SCBA until the hazards or contaminants are identified and/or no longer exist.

- b. The Safety Officer shall determine when the removal of breathing apparatus is permissible and shall notify the Incident Commander as such. In the absence of an on-scene Safety Officer, the Incident Commander shall make the determination. (For further, see LCFR SOP 05.03.03 and FRG 2.1.8.)

### **Respirator Selection for Hazardous Environments – TB/Airborne Infectious Diseases**

1. Approved N95 respirators shall be donned and utilized to provide respiratory protection for members against the transmission of the tuberculosis droplet nuclei and other airborne infectious diseases.
  - a. Patient care situations that require the donning of the N95 respirator shall include: the confirmation of active tuberculosis by the patient, when members suspect tuberculosis by the signs and symptoms exhibited by the patient, and when certified EMS providers are intubating and/or suctioning patients in the field. The N95 respirator shall be discarded after each use in the proper biohazard waste container.

### **Respirator Selection for Hazardous Environments – Hazmat**

1. Respiratory protection shall be required for Hazardous Material (Hazmat) Emergencies.
  - a. Personnel shall don and utilize approved SCBA for Hazmat operations, to include decontamination. If the hazard cannot be identified and/or measured, or an IDLH atmosphere exists, SCBA shall be utilized.
  - b. If the hazard can be identified and/or measured, and the atmospheric oxygen level is above 19.5 percent, the Powered Air-Purifying Respiratory or the Air Purifying Respirator with the appropriate cartridges may be used.
  - c. The Safety Officer shall determine when the removal of breathing apparatus is permissible and notify the Incident Commander. In the absence of an on-scene Safety Officer, the Incident Commander shall make the determination.

### **Respirator Selection for Hazardous Environments – Fire Marshal's Office**

1. Fire Marshal's Office (FMO) personnel shall wear the appropriate air purifying respirator(s) when the following conditions exist:
  - a. When conducting an origin and cause investigation on any enclosed area.
  - b. When members suspect dust and/or vapors may be released upon the investigation.
  - c. Donning of the APR shall require the use of protective eyewear.
2. Personnel shall provide adequate forced ventilation to help eliminate fire gases and vapors (electric fans only).



3. The Safety Officer must approve the entry of the investigating Fire Marshal prior to his/her entry into the structure. In the absence of a Safety Officer, the Incident Commander will approve FMO entry.
4. In conjunction with the Respiratory Protection Manager, individual Fire Marshals will be responsible for basic fit testing and cleaning and maintenance of his/her APR in accordance with the manufacturer's recommendations.

### **Warning Signs of Respirator Failure and Emergency Procedures**

Any loss of air – either a perceived leak or a change in air flow to the respirator – indicates that the user should immediately stop any activities and notify command. The entire crew shall exit the hazard area as a unit.

### **Self-Contained Breathing Apparatus (SCBA) Use Restrictions:**

The System-approved Scott Air-Pak SCBA shall not be used underwater. The components of the system have an open design that will allow water to enter the pressure reducer and increase the likelihood of damage and/or respirator failure.

Should the Scott Air-Pak breathing regulator be subjected to submersion in either fresh or salt water, prompt cleaning is mandatory to reduce the corrosion within the unit. The entire unit and individual's regulator must be placed out-of-service and sent for repair in accordance with established procedures.

If submerged during use, the Scott Air-Pak SCBA should function long enough to allow an individual to get out of the water safely. However, the amount of time a submerged unit will function varies according to the type of water, length of underwater exposure, and depth of water to which the Air-Pak is subjected.

## **TRAINING AND INFORMATION**

### **Training**

Prior to using a respirator, personnel shall receive the following training:

1. Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;
2. What the limitations and capabilities of the respirator are;
3. How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
4. How to inspect, put on and remove, use, and check the seals of the respirator;
5. What the procedures are for maintenance and storage of the respirator; and,
6. How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

# **CARE AND MAINTENANCE OF RESPIRATORY PROTECTION EQUIPMENT**

## **General**

1. The Respiratory Protection Manager shall ensure that all SCBA assigned to stations are clearly marked with the station to which they are assigned.
2. In-service SCBA shall be stored in a ready-for-use condition.
  - a. Cylinders shall be maintained at the full level (at least 4000 psi).
  - b. All harness straps shall be adjusted to their maximum length during storage.
3. In all instances, SCBA shall be stored in a manner to control and minimize exposure to shock, vibration, sunlight, heat, extreme cold, excessive moisture, damaging chemicals, and environmental elements.
4. SCBA mounted in an apparatus riding compartment shall be secured by an NFPA-compliant positive mechanical latch.
5. Spare SCBA bottles shall be maintained on all suppression vehicles.
6. Personnel shall not back the SCBA into the apparatus mounting bracket, as it damages the cylinders and brackets.

## **Inspection, Cleaning, and Disinfection**

1. SCBA (to include the facepiece, regulator, harness, and cylinder) shall be inspected at the beginning of each duty shift and after each use according to the manufacturer's recommendations. The results of these inspections shall be documented in the apparatus checkout book. If no such document exists, personnel shall document the SCBA checkout in the station log book.
2. In accordance with NFPA 1404, all SCBA utilized by members of Loudoun County Fire and Rescue shall undergo an annual inspection and flow test. This inspection and flow test shall be conducted by a certified repair technician under the guidance of the Respiratory Protection Manager.
3. All issued face pieces shall be engraved with individual identification number and letter designator. Face pieces shall be flow tested annually by SCBA Repair Technicians.
4. If any malfunctions or damage are noted during an inspection, then the unit shall be placed out of service and forwarded to the appropriate SCBA Repair Facility as discussed in the following section.
5. All respirators, except for disposable types, shall be cleaned and disinfected after each use or on a monthly basis. These tasks shall be done per the manufacturer's recommendations.

6. The facepiece shall be thoroughly cleaned after each use and disinfected as needed.
7. LCFR shall provide Scott Multi-Wash (and associated MSDS forms) for disinfection of County-owned facepieces and regulators.
8. Contamination and Decontamination – Where SCBA is suspected of being contaminated, it shall be tagged out-of-service and segregated from other equipment and personnel. Tags shall include details of the incident including known and suspected contaminants.
  - a. If necessary, the SCBA manufacturer shall be contacted to determine if it is possible to decontaminate the SCBA.
  - b. In all cases, decontamination shall be conducted in accordance with the SCBA manufacturer's instructions.
  - c. Where it is determined that the SCBA is contaminated beyond the ability to decontaminate it and return it to service, the SCBA shall be destroyed and disposed of.
9. Under no circumstances shall chlorine bleach be used to clean straps and harness assemblies.
10. Caution shall be taken to prevent water or cleaning materials from entering the connection between the cylinder valve and the mating SCBA inlet connector.

## **Repair**

1. Repairs or alterations to Loudoun County serviced air compressors, cascade systems, or light and air units shall be performed only by Department-approved personnel.
2. ANSI recommendations and OSHA regulations state that SCBA repairs shall be completed by a factory trained technician.
  - a. No attempt shall be made to replace components or to make adjustments or repairs beyond the manufacturer's recommendations.
  - b. **Under no circumstances** will station personnel make any repairs or alterations to breathing apparatus unless certified to do so.
  - c. All repairs shall be made with SCOTT supplied parts. Loudoun County in house repair shall only be completed on equipment owned by Loudoun County. This is a requirement of our service contract with Scott.
3. The Program Services Division shall be responsible for initiating and maintaining certified, factory-trained SCBA Technicians to render repairs.
4. Volunteer companies that do not participate in the County's SCBA program shall ensure that SCBA are repaired by certified, factory-trained SCBA Technicians.

### ***Repair Procedures for County Serviced SCBA***

1. Only trained and certified personnel shall repair SCBA and facepieces.

2. Worksites shall not exchange SCBA amongst themselves.
3. Personnel will remove an SCBA or cylinder that is in need of repair from service and tag it using a red tag provided by the Respiratory Protection Manager.
  - a. Personnel shall write a legible note on the tag detailing the problem(s) with the SCBA/cylinder along with his/her name.
4. Personnel shall notify the OIC that the SCBA/cylinder has been removed from service. The OIC or designee shall notify the Respiratory Protection Manager via email ([scbarepair@loudoun.gov](mailto:scbarepair@loudoun.gov)) and complete the SCBA Repair Form (Form 038) for processing.
5. The on-duty Battalion Chiefs, Safety Officer, and/or Logistics shall transport the out of service equipment to and from the appropriate SCBA Repair Station (FS6, FS8, FS11, or Training Academy), as directed by the Respiratory Protection Manager.
  - a. When moving equipment, it is essential that the entire SCBA (frame, reducer, and regulator) are kept together.
6. SCBA that are taken out of service due to the serious injury or death of the wearer or an operational failure shall be retained by the Safety Officer (or Battalion Chief 602 after 1800) pending investigation of the failure, injury or fatality.
7. The Respiratory Protection Manager shall determine whether the station requires a loaner SCBA. If so, the OIC or designee shall fill out a Loaner SCBA Form (Form 039) and submit it to the Respiratory Protection Manager via email ([scbarepair@loudoun.gov](mailto:scbarepair@loudoun.gov)).
  - a. The on-duty Battalion Chiefs, Safety Officer, and/or Logistics will deliver the loaner, which shall be marked as such to distinguish it from the station's SCBA cadre.
8. Repaired SCBA will be identified with a green tag (provided by the Respiratory Protection Manager) and shall be returned to the appropriate station by the Battalion Chiefs, Safety Officer, and/or Logistics. If necessary, he/she will also collect the loaner SCBA and return it to the facility designated by the Respiratory Protection Manager.
9. Any SCBA unit component directly exposed to intense heat, chemicals, or water emersion shall be placed out of service and forwarded to one of the SCBA shops for inspection prior to being placed back in service.
10. Any SCBA cylinder that has been dropped or struck by a vehicle shall be placed out of service and forwarded to one of the SCBA shops for inspection prior to being placed back in service.
11. The Respiratory Protection Manager shall create and implement an annual SCBA testing schedule, to include SCBA cylinders, that complies with applicable NFPA Standards.

12. For non-County serviced SCBA, personnel shall refer to the policies and procedures developed by the volunteer department.

### ***Repair Procedures for NON-County Serviced SCBA***

The volunteer agency shall develop policies and procedures to ensure that SCBA are repaired by certified personnel.

### **Testing**

The Respiratory Protection Manager shall create and implement an annual SCBA testing schedule, to include SCBA cylinders, that complies with applicable NFPA Standards.

### **Filling Air Cylinders**

1. All breathing air cylinders shall be refilled only from a cascade system or air compressor that has been set up for this purpose.
2. Loudoun County serviced breathing air compressors provide Grades D and E breathing air. Air quality checks are performed regularly and documented by Respiratory Protection Manager.
  1. The results of these tests shall be posted in a conspicuous location around the compressor.
3. Mobile units (Light and Air Units, Rescue Squads, MAU) which have cascade systems shall be equipped with fragmentation containers to hold the cylinders being filled.
4. Stationary and mobile cascade systems shall have detailed procedures posted on how SCBA air cylinders are to be filled.
5. Prior to filling SCBA cylinders, personnel shall assess the condition of the cylinder and hydrostatic test date to determine if the cylinder should remain in service.
6. Loudoun County serviced breathing air compressors may be used to fill Self-Contained Underwater Breathing Apparatus (SCUBA) cylinders owned by law enforcement or other public safety agencies.
7. Personnel shall not use Loudoun County serviced breathing air compressors to fill personal SCUBA cylinders or any other type of pressurized cylinder.

### **Hydrostatic Testing**

1. The original manufacturer date and serial number are affixed to the cylinder, protected by the clear gel coat. Each time a cylinder is hydrostatically tested, a sticker will be affixed to the cylinder.

2. The date above indicates the last time the cylinder was hydrostatically tested. To determine the expiration date, add **FIVE** years to the most recent date stamped on the cylinder.
3. Each cylinder must be tested within thirty days of the expiration date. Cylinders requiring hydrostatic testing or repairs shall be tagged as discussed in the section entitled "Repair Procedures for County Serviced SCBA."

### **Adverse Conditions and Exposures**

Any SCBA unit component directly exposed to intense heat, chemicals, or water emersion shall be placed out of service and forwarded to one of the SCBA shops for inspection prior to being placed back in service.

Any SCBA cylinder that has been dropped or struck by a vehicle shall be placed out of service and forwarded to one of the SCBA shops for inspection prior to being placed back in service.

## **RECORDKEEPING**

### **Maintenance/Inspection Records**

1. Station Commanders/Worksite Supervisors shall maintain SCBA Inspection Forms (Form 043) for all apparatus assigned to their stations. Personnel shall document each time an SCBA is inspected.
  - a. These forms shall be forwarded to the Respiratory Protection Manager on a quarterly basis by the 5th of January, April, July, and October and retained for no less than five years.
2. For County-serviced compressors, Station Commanders/Worksite Supervisors shall maintain a clipboard or binder containing copies of Form 042 (Cylinder Fill Log). Personnel shall document each time an SCBA cylinder is filled.
  - a. These forms shall be forwarded to the Respiratory Protection Manager on a quarterly basis by the 5th of January, April, July, and October and retained for no less than five years.
3. Station Commanders/Worksite Supervisors shall ensure that the Respiratory Protection Manager receives an email by the 5th of each month with the number of compressor hours.
4. The Respiratory Protection Manager shall maintain all written and electronic records of assignment, repair, replacement of SCBA, cylinders, hydrostatic test date, compressor testing, etc.
5. Volunteer Chiefs, Station Commanders, and/or Worksite Supervisors are responsible for ensuring that breathing apparatus assigned to their stations are at their facility and that each inspection record (Form 043) corresponds to the breathing apparatus carried on the respective apparatus.

### **Fit Test Records**

1. Upon completion of each fit test, the department shall keep on file, a record of the fit factor results of the individual being tested.
2. Per OSHA 29 CFR 1910.1027, Appendix C, the fit test record shall be maintained until the next fit test is administered.
3. Respirator fit testing shall include the type of respirator, brand name, model, method of test, test results, test date, and the name of the fit tester. The fit test record shall be maintained at headquarters by the Volunteer Coordinator or the Health and Safety Office.



## **Records for Zero-Checking the Portacount Plus**

1. Prior to performing fit tests, the individual administering these tests shall conduct and record a Zero-Check on the Portacount Plus instrument to be used. Zero-Checking shall be conducted and recorded on every Portacount Plus instrument that is used.
2. A Zero-Check will be conducted and recorded quarterly (every three months) on any Portacount Plus instruments that are not used on a regular basis. The purpose of the Zero-Check is to ensure that the instrument is functioning properly.
3. The Zero-Check record shall include:
  - a. Serial number of Portacount Plus instrument.
  - b. Date of Zero-Check.
  - c. Person performing the Zero-Check.
  - d. Printed copy of the Zero-Check.
4. Maintenance records for necessary repairs and calibrations of each Portacount Plus instrument shall be kept by the Respiratory Protection Manager and/or Safety Officer.

## **Manufacturer's Resource Notebook**

All work locations shall maintain a complete copy of the Scott *SCBA User's Guide Notebook*. This notebook shall include user guide(s), Scott Multi Wash guidelines, etc.

## **ASSURANCE OF AIR QUALITY**

The Respiratory Protection Manager or designee shall develop and implement a program to conduct testing and monitoring of breathing air and breathing air supply systems used for respiratory protection. Said program will comply with applicable regulatory standards, to include NFPA 1989 *Breathing Air Quality for Emergency Services Respiratory Protection*.